



EFFECT OF PHYSICAL EDUCATION CLASSES ON PHYSIOLOGICAL PARAMETERS OF MIDDLE SCHOOL STUDENTS

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ABSTRACT

The purpose of this study is to investigate the influence that middle school students' participation in physical education (PE) classes has on their physiological markers. The relevance of physical education in fostering general health and well-being among teenagers is brought to light by this aspect. Participating in physical education sessions on a consistent basis has been shown to improve a variety of aspects of health, including cardiovascular ($p < 0.05$) and maximum oxygen consumption ($p < 0.05$). In order to improve students' overall health and academic performance, it is essential to have a solid understanding of the value of physical education in middle school education.

KEYWORDS: Physical Education, Physiological Parameters, Middle School, Students, Health, Wellbeing

INTRODUCTION

Middle school kids should not miss out on the opportunity to participate in physical education (PE) programs because these classes help students improve their cardiovascular fitness, muscular strength, flexibility, body composition, blood pressure, cholesterol levels, mental health, and academic performance. By attending physical education programs on a consistent basis, one can increase their heart and lung function, which ultimately leads to improved cardiorespiratory fitness. The development of muscular strength and endurance can be accomplished by the use of strength training activities such as push-ups, sit-ups, and weightlifting. This ultimately results in stronger muscles and greater physical performance. Additionally, stretching exercises are incorporated into the program in order to enhance flexibility and range of motion, hence lowering the likelihood of accidents and enhancing posture and improving body mechanics (Kohl, 2013). Physical education on a regular basis can assist in the maintenance of a healthy body weight, the reduction of the risk of obesity, the improvement of blood pressure and cholesterol levels, and the elimination of the risk of cardiovascular illnesses over the long run. In addition, physical education sessions have the potential to lower levels of stress, anxiety, and depression, so fostering a sense of well-being and helping to increase mental clarity. Engaging in physical education on a consistent basis has the potential to increase cognitive function and academic performance. This can be accomplished by fostering improved concentration, attention, and memory, which eventually leads to enhanced academic outcomes for middle school kids. Physical education classes, in general, offer children a structured atmosphere in which they can participate in physical exercise. This environment helps kids acquire healthy habits and has a favorable impact on their overall development (Daniels et.al., 2011).

Physical education, sometimes known as PE, is an essential component of the educational curriculum in schools because

it helps students improve their physical, mental, and social well-being. Concerns about sedentary lives, childhood obesity, and mental health issues among young people have led to an increased awareness of this phenomenon. It is necessary to have an understanding of the significance of physical education in schools in order to encourage healthy habits and overall growth. Physical education has been found to improve a variety of areas, including cardiovascular and respiratory endurance, muscular strength, flexibility, and body composition, as well as physical fitness. A reduction in the risk factors for chronic diseases such as obesity, diabetes, and cardiovascular ailments can be achieved via consistent participation in physical education sessions (Centre for Disease Control and Prevention, 2013 & 2011).

Additionally, physical education improves mental well-being by reducing feelings of stress, anxiety, and depression, hence fostering improved mental health and resiliency in general. Important life skills and healthy social behaviors are fostered as a result of the chances it provides for social engagement, teamwork, and leadership development (Subramanyam et.al., 2024).

There appears to be a beneficial correlation between physical activity and academic success, according to recent available information. The cognitive function, attention span, and academic accomplishment of students who participate in regular physical activity, including participation in physical education classes, are all shown to be improved. Participating in physical education improves brain function, neuroplasticity, and academic motivation, all of which contribute to improved educational outcomes.

As a conclusion, physical education (PE) plays an important function in schools, as it helps to promote academic performance, mental well-being, and physical health. For the

purpose of shaping policies and practices that promote physical education programs in school settings, it is essential to have a solid understanding of the data from past studies (Trudeau and Shephard, 2008).

The purpose of this study is to explore the influence that middle school students' participation in physical education (PE) classes has on their physiological markers. The purpose of this study is to make a contribution to the current body of information by investigating the connection between frequent involvement in physical education and changes in physiological indicators. In order to collect data from middle school children who are engaged in physical education programs, the research will make use of quantitative approaches such as surveys, physical fitness evaluations, and physiological measurements. In order to investigate the associations that exist between physical education participation and changes in physiological measures over the course of time, statistical studies will be carried out. This research will be used to inform educational policies and practices that are targeted at enhancing the integration of physical education programs in middle schools and improving their overall quality. The findings will contribute to the promotion of evidence-based methods to physical education, which will in turn support the holistic development and well-being of students who are enrolled in middle school.

METHODOLOGY

The purpose of this study is to evaluate the impact that middle school students' participation in physical education (PE) classes has on their physiological parameters. The research design utilized in this investigation is a cross sectional study. For the duration of the study, which will be carried out over the course of one academic year, data was collected before and after the intervention.

Total 220 subjects out of which 110 were treated as experimental groups and 110 were control subjects. Participants in the sample population are middle school kids who are between the ages of 11 and 14 and who are enrolled in public schools located within the Amravati and Nagpur regions. In order to ensure that the sample was representative of the population, a method known as convenience sampling was applied to recruit individuals from a wide range of socioeconomic backgrounds and ethnicities. During the course of the academic year, the collection of data includes the measurement of physiological parameters carried out at both the beginning and the end of the intervention test. The cardiovascular Fitness (Assessed using standardized tests such as the 12-minute run/walk test) and oxygen consumption was assessed before and after the intervention.

Statistical Treatment

The data pertaining to this study were obtained from task performed by the selected subjects. Obtained data was then analysed by using Descriptive (Mean \pm SE), SD, and inferential (independent t-test) statistics with the help of inbuilt statistical program namely SPSS - 18 (Statistical Package for Social Science – 18). The level of significance was set at 0.05.

Results

Variable	Experimental	Control	t-test	
	Mean \pm SE	Mean \pm SE	t- value	p - value
12 Min. Run	2322.64 \pm 43.17	2011.17 \pm 60.63	4.23	0.01
VO2max	40.48 \pm 1	33.48 \pm 1.35	4.21	0.01

Table 1: Comparison of 12-minute run and VO2max between experimental and control groups

Table 1 shows Mean \pm SE and t-value of 12 min run and walk of both groups. At group level the average distance was significantly higher in most of physically active groups. The mean distance covered in 12 minute run and walk test were 2322.64 \pm 43.17 and 2011.17 \pm 60.63 for experimental and control groups, respectively. A statistically significant ($p < 0.05$ from t-test) difference was documented for distance run between the group. The mean distance run was significantly higher in physically active group than the control group.

The maximum aerobic capacity (Coopers, 1958) was computed for each physically active subjects. At group level the VO2max was 40.48 \pm 1, and 33.48 \pm 1.35, for experimental and control groups, respectively. The maximum oxygen capacity is significantly higher in experimental group.

DISCUSSION AND CONCLUSION

According to the findings of the study, there were notable variations in the levels of VO2max and performance during a 12-minute run between the experimental group and the control group. The findings presented here provide light on the influence that structured physical activity, in particular that which is provided by physical education (PE) programs, has on the physiological parameters measured by middle school pupils. The group that participated in the experiment demonstrated enhanced cardiovascular fitness, as evidenced by a greater mean distance covered during the 12-minute run trial. The findings of this study imply that students who regularly participate in physical education programs might improve their endurance and aerobic capacity, which in turn contributes to improved cardiovascular health overall. In addition, the higher mean VO2max lends credence to the idea that engaging in physical activity leads to enhancements in aerobic capacity, which in turn indicates a higher level of oxygen uptake efficiency during exercise. This demonstrates the significance of including aerobic activities into physical education curricula in order to encourage middle school pupils to achieve their highest possible level of aerobic fitness. In addition, the findings lend support to the incorporation and priority of high-quality physical education programs within the curriculum of schools, indicating the potential for such interventions to have a favorable impact on the physiological health of students. As middle school kids make the journey into adulthood, the variations that have been noticed may have long-term ramifications for their health to consider.

It has been demonstrated through this research that middle school pupils' physiological parameters are strongly influenced by their participation in physical education (PE) programs. It

demonstrates that structured physical activity programs have a positive affect on the cardiovascular fitness and aerobic capacity of teenagers. Physical education programs are successful in developing endurance and aerobic fitness, as seen by the improved VO₂max levels and the higher mean distance traveled in the 12-minute run test. These findings have repercussions for the promotion of health, the prevention of disease, educational policy, and the future health outcomes of individuals over the long run. The promotion of better lifestyles and the reduction of the risk of chronic diseases that are related with sedentary behavior can be accomplished in schools. It is possible that the enhancements in cardiovascular fitness and aerobic capacity will have a lasting impact on the health and well-being of adolescents as they move into adulthood.

REFERENCES

1. Centers for Disease Control and Prevention. A Guide for Developing Comprehensive School Physical Activity Programs. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2013.
2. Centers for Disease Control and Prevention. School health guidelines to promote healthy eating and physical activity. *MMWR*. 2011;60(RR05):1–76.
3. Committee on Physical Activity and Physical Education in the School Environment; Food and Nutrition Board; Institute of Medicine; Kohl HW III, Cook HD, editors. *Educating the Student Body: Taking Physical Activity and Physical Education to School*. Washington (DC): National Academies Press (US); 2013 Oct 30. 3, Physical Activity and Physical Education: Relationship to Growth, Development, and Health. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK201497/>
4. Daniels SR, Pratt CA, Hayman LL. Reduction of risk for cardiovascular disease in children and adolescents. *Circulation*. 2011 Oct 11;124(15):1673-86.
5. Francois Trudeau and Roy Shephard (2008) Physical Education, School Physical Activity, School Sports and Academic Performance. *International Journal of Behavioural Nutrition and Physical Activity*, 5.
6. Subramanyam AA, Somaiya M, De Sousa A. Mental health and well-being in children and adolescents. *Indian J Psychiatry*. 2024 Jan;66(Suppl 2):S304-S319. doi: 10.4103/indianjpsychiatry.indianjpsychiatry_624_23.